

“high.” Moreover, having the sections 78 and 80 use different types of switches 82 may also help in simplifying code implementation. For example, n control signals 86 may be sent to the switches 82 of supply section 78 such that the each bit of the bit-string of the thermometer coded digital data is sent to a corresponding switch 82 in order, as depicted in FIGS. 9-12. Likewise, identical thermometer coded digital data 42 may be sent to the switches 82 of the reference section 80. Because the supply section 78 and the reference section 80 are different types of switches 82, the same thermometer coded digital data 42 may turn on a switch 82 in one section 78 or 80 and turn off a switch 82 in the other section 78 or 80. As such, in one embodiment, switches 82 of the supply section 78 may have a corresponding partner in the reference section 80 such that both switches 82 of the cross-section pair are not on simultaneously. Although illustrated as activating and deactivating switches 82 in an order corresponding to the thermometer coding, in some embodiments, a different coding scheme may be utilized such that the switches 82 are not activated or deactivated linearly along the resistor ladder 74, but still retain approximately the same effective impedance throughout the gamut of different output voltages 38.

[0062] FIG. 14 is a flowchart 106 of an example operation of the DAC 28. The thermometer coded digital data 42 may be received (process block 108), for example via a code converter, and/or directly into the DAC 28. The DAC 28 may send control signals 86 to the switches 82 of the supply section 78 and the reference section 80 (process block 110). The switches 82 in the sections 78 and 80 may be activated or deactivated, based on the control signals 86, such that cross-section pairs of switches 82 are not activated simultaneously (process block 112). Moreover, the analog output voltage 38 may be output (process block 114), for example, via the output node 76.

[0063] As discussed herein, by varying the impedance of different sections 78 and 80 of the resistor ladder 74 and/or by utilizing thermometer coding, a DAC 28 of an electronic device 10 may generate analog output voltages 38 that are less susceptible to error and/or have a more uniform current draw on the power source 26, which may lead to less variation in the supply voltage 56. Moreover, although the above referenced flowcharts 66, 94, and 106 are shown in a given order, in certain embodiments, process blocks may be reordered, altered, deleted, and/or occur simultaneously. Additionally, the referenced flowcharts 66, 94, and 106 are given as illustrative tools and further decision and process blocks may also be added depending on implementation.

[0064] The specific embodiments described above have been shown by way of example, and it should be understood that these embodiments may be susceptible to various modifications and alternative forms. It should be further understood that the claims are not intended to be limited to the particular forms disclosed, but rather to cover all modifications, equivalents, and alternatives falling within the spirit and scope of this disclosure.

[0065] The techniques presented and claimed herein are referenced and applied to material objects and concrete examples of a practical nature that demonstrably improve the present technical field and, as such, are not abstract, intangible or purely theoretical. Further, if any claims appended to the end of this specification contain one or more elements designated as “means for [perform]ing [a function] . . . ” or “step for [perform]ing [a function] . . . ”, it is

intended that such elements are to be interpreted under 35 U.S.C. 112(f). However, for any claims containing elements designated in any other manner, it is intended that such elements are not to be interpreted under 35 U.S.C. 112(f).

What is claimed is:

1. An electronic device comprising:

a digital to analog converter configured to:

receive a plurality of digital signals; and

output a plurality of analog signals based at least in part on the received plurality of digital signals; and

a power source configured to supply current to the digital to analog converter;

wherein the digital to analog converter comprises:

a first resistor ladder section configured to electrically couple an output node of the digital to analog converter to the power source via a first number of resistors in series; and

a second resistor ladder section configured to electrically couple the output node to a reference voltage via a second number of resistors in series, wherein a sum of the first number of resistors in series and the second number of resistors in series is the same for each of the plurality of analog signals.

2. The electronic device of claim 1, wherein the digital to analog converter comprises:

a first plurality of switches configured to electrically couple the output node to the power source via the first number of resistors in series; and

a second plurality of switches configured to electrically couple the output node to the reference voltage via the second number of resistors in series.

3. The electronic device of claim 2, wherein a first switch of the first plurality of switches corresponds to a second switch of the second plurality of switches such that the first switch is not on while the second switch is on.

4. The electronic device of claim 2, wherein the first plurality of switches comprises a plurality of PMOS transistors and the second plurality of switches comprises a plurality of NMOS transistors.

5. The electronic device of claim 4, wherein a source of the each of the plurality of PMOS transistors is directly electrically coupled to the power source, and wherein a source of each of the plurality of NMOS transistors is directly electrically coupled to the reference voltage.

6. The electronic device of claim 1, wherein the plurality of digital signals comprise a plurality of thermometer coded digital signals.

7. The electronic device of claim 1, wherein a digital signal, of the plurality of digital signals, corresponding to an analog signal of the plurality of analog signals, comprises a bit string, wherein the digital to analog converter is configured to operate each switch of a first plurality of switches based at least in part on a single bit of the bit string.

8. The electronic device of claim 1, wherein the digital to analog converter is configured to receive an enable signal, wherein in response to the enable signal, the digital to analog converter is configured to draw power from the power source and output an analog signal of the plurality of analog signals.